REMARKS

At the time of the outstanding office action, claims 1, 2 and 4-10 were pending. By way of the instant amendment, claims 1 and 7 have been amended and claim 11 has been added. Thus, claims 1, 2 and 4-11 are pending.

Prior Art Rejections

Claims 1, 2, and 4-6 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,525,788 (Bridgelall) in view of Japanese Reference JP 3-1285 (Inagaki), U.S. Patent No. 5,436,439 (Nishimura) and U.S. Patent No. 5,308,960 (Smith). The Office Action cites Smith as discloses continuously adjusting the focus of an optical symbol reading device in col. 21, line 9-col. 22, line 33. Applicants respectfully traverse the rejection for at least the following reasons.

Smith discloses a continuous focus system 500 used to continuously focus camera 50 of multiple code camera systems 10, 100 in real time (col. 21, lines 10-12). Within focusing system 500 the scanning distance between camera 50 and a surface below camera 50 is constantly measured by distance sensor system 506 (col. 21, lines 12-15). Distance sensor system 506 is preferably adapted to measure the distance from camera 50 downward to conveyor belt 20 or to the top surface of moving object 42 disposed upon conveyor belt 20 (col. 21, lines 15-19). The distance is measured based on the counter value of counter 520 which initiates a count based on receipt of a trigger signal from conveyor encoder 152 and terminates counting upon receipt of the echo signal 512. Thus, the number of counts in the counter 520 is indicative of the distance to the top surface of the conveyed article.

Most importantly, Smith introduces an intentional delay 524 between the counter 520 and the control circuitry to control the focus of the optical scanning device 154. This delay 524 is introduced based the distance between the camera axis 522 and the sensor axis 524 and based on conveyor speed (see column 22, lines 19-20). It is clear that the focus of the optical scanning device 154 is adjusted at a particular time such that at the time of adjustment, the article is positioned below the optical scanning device and along the axis 522 of the optical scanning device. Otherwise there would be no reason for Smith to need and use the delay 524. Thus, while Smith discusses "continuously" adjusting the focus of the camera, it is clear that

Smith means to adjust the focus to any article distance as measured by the distance sensor when the article passed under the axis 524 of the distance sensor 506 and to implement that change in the focus of the optical system only after a suitable time delay such that the article has moved to be positioned on the optical axis 522 of the optical scanning device.

In contrast, the present invention uses a truly continuous adjustment of the optical focus which is adjusted in real time without time delay. Of course, in practice, there would always be some insignificant time delay imposed by the transport time of electrical signals and time delay in moving focusing systems. However, applicnat does not introduce and intentional time delay and certainly does not introduce any time delay based on conveyor speed.

Applicant has amended claims 1 and 7 to specifically distinguish over the Smith teaching. In particular, claim 1 has been amended to recite that "said continuous adjusting being made without time delay based on conveyor speed", and claim 7 has been amended to recited "continuously adjusting the focus of said optical symbol reader based on said calculated distance to said front surface without time delay based on conveyor speed."

In view of the history of this application, it is clear that with the above changes to the independent claims, the combined teachings of the prior art (Bridgelall in view of Inagaki, Nishimura and Smith). to not make out a *prima facie* case of obviousness within the provisions of 35 U.S.C. 103 since the combined teachings taken together (even if permissible which applicant does not concede) do not show all the recited limitations of applicant's claims 1 and 7. Thus, independent claims 1 and 7 are deemed to be allowable. Likewise applicant's dependent claims are deemed allowable since they depend directly or indirectly on independent claims 1 and 7.

New claim 11 has been added. This new claim requires at least one optical symbol on at least one of the front and back surfaces of the article. This claims likewise has been restricted to recited that "continuously adjusting the focus of said optical symbol reader based on said calculated distance to said at least one of said front surface and back surface without time delay based on conveyor speed".

Conclusion

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge deposit account No. 19-0741 for any such fees; and applicant hereby petitions for any needed extension of time.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) An optical symbol reading device comprising:

a) an image data input section including:

1) a front surface symbol reading device and back surface symbol reading device,

2) an image data input unit for receiving a bar code label, characters, symbols, or image data on an article that is moved by a conveyor, and

3) an image data input focus point modifier;

b) an article detector for detecting that said article has entered a read zone;

c) an interpreter for converting electric signals from said image data input section to electronic signals representative of at least one of numbers ~~or~~and characters as interpretation results;

d) an interpretation result output section for outputting the interpretation results of said interpreter to an external device;

e) a front surface/back surface position detector for continuously detecting a position on said conveyor of both a front surface and a back surface of an article ~~that~~as said article is moved by said conveyor to provide data indicative of continuously changing positions of said article ; and

f) an image data input focus point control section for outputting data from said front surface/back surface position detector to said image data input focus point modifier, said image data input focus point modifier continuously adjusting the focus point of said front surface reading device and said back surface reading device based on said data from said front surface/back surface position detector, said continuous adjusting being made without time delay based on conveyor speed.

~~wherein said image data input section receives electrical signals obtained solely from light signals.~~

7. (Amended) A method of reading an optical symbol, comprising the steps of:

a) conveying an article on a conveyor, said article including a first optical symbol on a front surface and a second optical symbol on a back surface;

b) reading said first optical symbol while conveying said article; and

c) reading said second optical symbol while conveying said article,

d) wherein the step of reading said first optical symbol comprises the steps of:

1) detecting said front surface of said article;

2) calculating a distance from an optical symbol reader to said front surface;

3) continuously adjusting the focus of said optical symbol reader based on said calculated distance to said front surface without time delay based on conveyor speed; and

4) sensing said first optical symbol with said optical symbol reader, and

e) wherein the step of reading said second optical symbol comprises the steps of:

1) detecting said back surface of said article;

2) calculating a distance from said optical symbol reader to said back surface;

3) continuously adjusting the focus of said optical symbol reader based on said calculated distance to said back surface without time delay based on conveyor speed; and

4) sensing said second optical symbol with said optical symbol reader~~,~~. ~~wherein said optical symbol reader senses solely with light signals.~~